

## A PRELIMINARY ACCOUNT OF THE APHIDIDAE OF POONA

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The aphididae of Poona are insects that have been very little collected and about which very little is known. The group, even in India as a whole, is very little studied. The lack of information is not, however due to any lack of importance. The aphids are widely known as one of the worst of agricultural pests and, particularly so, on account of their excessive and rapid power of multiplication. The life of these insects is also very peculiar. There are dimorphic forms—alate and apterous—of which the apterous ones are the most important from the economic point of view. The apterous females reproduce parthenogenetically and viviparously and thus their multiplication goes on by leaps and bounds. Some of these apterous females develop wings and reproduce their kind parthenogenetically and viviparously. The alate forms are principally concerned in the spread of infection from plant to plant while the intensity of damage depends upon the apterous colonies. The usual period of activity of aphids is from July to February; however, some species are found in the summer months also. The cold of winter appears to have no effect on their breeding and growth. There is no sexual generation observed in this part of India. Males are absent and no eggs have been noticed.

The damage done by the aphids is principally by the withdrawal of the sap from the shoots and leaves which consequently shrivel and wither. The aphids are very potential pests and if not checked in time a great deal of damage is done. They have been found to attack various crops—annuals and perennials. The citrus trees, as soon as the new shoots are thrown out in February and March are very seriously attacked, which results in checking the bearing. Mango shoots are observed sometimes to be full of aphids in February and March and a serious attack is bound to affect the bearing of fruits. Various vegetables and pulses are invariably attacked during the monsoon and afterwards. Betelvine, tobacco, cotton and chillies do not also escape the attack of aphids. In this way examples can be multiplied to show that aphids are a universal pest. Some species are specific pest of certain crops, while others are polyphagous and there are other species like *Myzus* sp. which is said to have about 35 different hosts. In short, considering the longer period of activity, their feeding habits, and the nature of damage caused by them, aphids occupy an important place among the major pests of agricultural crops and orchard trees and a complete knowledge of their life and behaviour is absolutely necessary both from the academic and economic points of view. The writer has been investigating the problem of control of the cabbage aphids and in the course of his studies he has collected aphids on different plants and vegetables in order to find out the alternate hosts. This collection was sent to Dr. P. W. Mason, Bureau of Entomology, Washington, D.C., U.S.A. for identification and the writer acknowledges with thanks the help rendered by him in this connection.

Though the aphids are an important pest, knowledge about their classification is very meagre. The only literature dealing with Indian species is *The Memoir of the Indian Museum* on 'The Aphididae of Lahore' by Das (1918). The identification received from Dr. Mason was generally useful in placing the species in their proper places, but it must be said that many of the identifications done by the writer agree with those given by Das.

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The following is the preliminary account of the species collected by the writer during the last four years:—

A. TRIBE: **Callipterini**

(1) *Therioaphis ononidis* Kalt.

Young	...	Yellow and gray
Adult <sup>1</sup>	...	Gray
Pygidium	...	Gray
Cornicles	...	Dark

Host plant—Lucerne (*Medicago sativa*).

This species has been named by Das as *Callipterus trifolii* Monell. Lucerne appears to be the only host plant in the Deccan as the species has not been collected on any other leguminous plant. Both alate and apterous forms can be recognised by the pale yellow or gray colour and by the two rows of dusky spots on the back. The body with the dusky spots looks 'mouse like'. The attack is generally bad in summer months, but the insects have been observed in earlier months also. The anal plate is deeply bifid forming two long narrow lobes.

B. TRIBE: **Aphidini**

I. SUB-TRIBE: MACROSIPHINA

(2) *Myzus persicae* Sulz.

Adult	...	Greenish yellow
Young	...	Pale green
Pygidium	...	Greenish yellow
Cornicles	...	Dark (especially in alate forms).

Host plants—Cabbage, radish, brinjals, potato, chillies, lettuce, shepu, etc.

This species is greenish yellow in colour, large in size and is easily recognised by the prominent pointed tubercles which are strongly converging, and the small cauda. The alate females have dark patches on the back. This is usually known as *radish aphid* as it appears at its earliest on this crop in the month of August from where it spreads to other plants.

(3) *Macrosiphum pisi* Kalt.

Adult	...	Green
Young	...	Green
Pygidium	...	Green
Cornicles	...	Yellowish green with the tips dark

Host plant—Sweet peas (*Pisum sativum*).

The genus *Macrosiphum* can be distinguished from the genus *Myzus* by the strongly diverging frontal tubercles and the elongate cauda. This species is invariably found on peas from October till February at Mahableshwar and in the plains. The aphid is large in size, green in colour and spindle-shaped in form, smooth in texture. The legs are green, the cauda and cornicles long. These aphids, especially the adults, fall down on the soil at the slightest touch, and are found on older leaves oftener than on young shoots.

(4) *Macrosiphum* sp.

Adult	...	Reddish brown
Young	...	Red
Pygidium	...	Red
Cornicles	...	Reddish brown.

Host plant—Shevanti (*Chrysanthemum* sp.).

This species has been identified by Dr. Mason as *Macrosiphonella sanborni*. It has been observed on the Chrysanthemum plants in October and is always confined to the young shoots which consequently get stunted.

<sup>1</sup> The term Adult in this description refers to the apterous form.

## II. SUB-TRIBE : APHIDINA

(5) *Siphocoryne indobrassicae* Das

Young	...	Yellow and green
Adult	...	Bluish green
Pygidium	...	Dark
Cornicles	...	Dark

Host plants—Cabbage, knolkhol, cauliflower, mogri (a kind of radish), turnips.

This species is invariably found on cabbage. The first appearance is in October, on seedlings, as soon as the cold weather sets in. It continues to breed till March when it disappears. It becomes a serious pest if not checked in time.

This species has been identified by Dr. Mason as *Rhopalosiphum pseudo-brassicae* (Davis) Das (1) has discussed on page 173 of his *Memoir* the history of the names *Rhopalosiphum* and *Siphocoryne* and the characters of *Siphocoryne* given by Van der Goot and Das are as follows:—

- (1) Frontal tubercles indistinct.
- (2) Sensoria in the apterous females always absent.
- (3) Cornicles clubbed in both—apterous and alate forms.

Those agree in the case of the species found in Poona and hence it has been put under *Siphocoryne*.

(6) *Siphocoryne avenae* Fabr.

Adult	...	(Winged) dark
Young	...	Not found
Cornicles	...	Dark brown

Host plant—Tobacco (*Nicotiana tabacum*).

This appears in Poona in the month of November. Only alate forms are found on leaves. Apterous forms and the young ones are not observed on plants.

(7) *Aphis sacchari* Zehut

Adult	...	Pink
Young	...	Almond yellow and pink
Pygidium	...	Black
Cornicles	...	Black

Host plants—Jowar, maize, bajri, rala, etc.

This species has been observed in Poona in the month of August on the underside of the leaves of maize and jowar. In the colonies are found insects of two different colours, whitish yellow and pink. These are attended on by large black ants. The black sooty mould grows profusely in the honey dew secreted by the insects and the leaves become dark in colour.

(8) *Aphis maidis* Fitch.

Young	...	Green or pale green
Pygidium	...	Greyish dark
Cornicles	...	Dark

Host plant—Jowar.

Along with the previous species this aphid is also observed on jowar shoots in August. This can be recognised by the colour, which is blue-green.

(9) *Aphis gossypii* Glover

Young	...	Yellow
Adult	...	Dark (Pupa—dark)
Pygidium	...	Dark
Cornicles	...	Dark

Host plants—Cotton, bhendi and hollyhock.

This aphid persists on cotton right from August to March. The yellow colour sometimes changes to greenish dark, hence there is ground for confusion about the proper identification, as this then resembles the next species.

If the attack is very bad in the very early stage of the crop, the leaves curl and the crop shows signs of withering.

(10) *Aphis malvae* Koch

Young	...	Yellow, pale white
Adult	...	Alate dark, apterous—greenish dark
Pygidium	...	Dusky
Cornicles	...	Dark

Host plants—Cucumber, pumpkin, kohla, dodka, snake gourd, bottle gourd, parwar, tondali, karli, etc.

This species has been observed on these plants mainly in the monsoon and also on melons in the summer months. It is sometimes a serious pest and the crop suffers a great deal. The yellow colour of the young changes to dark green; and the alate forms are dark coloured.

(11) *Aphis medicaginis*, Koch

Young	...	Dark reddish brown
Adult	...	Reddish brown—full grown apterous adults with shining black spots on the back.
Pygidium	...	As the body colour—black
Cornicles	...	Black

Host plants—Wal, chavali, ghevda.

All the species collected on different leguminous crops were sent to Dr. Mason who identified them all as *Aphis rumicis*. The characters of *Aphis rumicis* given by Das and Theobald are:—

- (1) Body dull black to dark greenish
- (2) Post cornicular segments striped
- (3) Forms pseudo galls

While those of *A. medicaginis*

- (1) Body in the adult apterous female with a large shining black spot on back.

The colour, other characters, and particularly the habit of forming pseudo galls on leaves so characteristic of *A. rumicis*, are not noticed here and therefore *A. medicaginis* appears to be the correct identification. The chief characteristic of the apterous females consists in having a shining black spot on the back. Besides, the whitish patch on the femora and the tibia is also a special feature. Van der Goot proposes the name *A. papilionacearum* which has been accepted by Das.

This species is sometimes a serious pest of bean which suffers a serious set back in growth and bearing.

(1) *Aphis nerii* (Boyer de Fonscolombe).

Young	...	Deep yellow
Adult	...	Yellow
Pygidium	...	Yellow
Cornicles	...	Dark

Host plant—Rui (*Calotropis gigantea*).

This species is most abundantly found on the veins and leaf stalks of Rui from August to February. All the lower leaves are covered with honey dew and the *capnodium* fungus growing on the secretion.

(13) *Aphis* sp.

Young	...	Reddish pink
Adult	...	Pink
Pygidium	...	Dark, conspicuously long
Cornicles	...	Dark brown

Host plant—Mango (*Mangifera indica*).

This species is found on young shoots and leaves of mango. This has been observed in November as well as in March. The alate form is pink in

colour; antennae dark, legs pale white except at the femora and tarsi, cornicles and cauda dark. The apterous form pink in colour, thorax waxy white, antennae white except at the tips, cauda hirsute, cornicles dark, abdomen punctured laterally on both the sides.

(14) *Aphis* sp.

Young	...	Dark
Adult	...	Dark
Pygidium	...	Dark
Cornicles	...	Dark

Host plant—Safflower.

This species has been observed on safflower from November to January. This aphid is dark in colour and infests all shoots and leaves. The multiplication is very rapid and the honey dew secretion so profuse that the whole plant gets covered with the sticky substance and the numerous moults of the aphids.

(15) *Toxoptera aurantii* Koch.

Young	...	Deep yellow turning brown
Adult	...	Shining dark
Pygidium	...	Dark
Cornicles	...	Dark

Host plants—Mosambi, utaran, sour lime, grape fruit, jamburi, orange, etc.

All the species collected on different citrus plants have been identified by Dr. Mason as *Aphis citricidus*. This does not appear to be correct. The genus *Aphis* is distinguished from the genus *Toxoptera* by the branching of the vein media in the fore wing. In *Toxoptera* it is once-branched, while in *Aphis* it is twice-branched. The wing venation of the species found on citrus plants in the Deccan agrees with that of *Toxoptera* and not with *Aphis*. As to the specific name it appears to be a new one. Das states that *Toxoptera aurantii* is sparsely found on citrus plants in Lahore, but in the Bombay Presidency it is abundantly found. This has been noticed from September till March and attacks especially the young shoots.

This species is synonymous with *Ceylonia theacola* Buckton and has been mentioned in the *Indian Museum Notes*, vol. ii, No. 1 as occurring on tea bushes.

## REFERENCES.

1. Das, B.—'The Aphididae of Lahore', *Memoirs of the Indian Museum*, vol. vi, No. 4 (1918).
2. Baker, A. C.—'Generic Classification of the Hemipterous Family Aphididae', *U.S.D.A. Bulletin*, No. 826 (1921).
3. Theobald, F. V.—*The Plant Lice or Aphididae of Great Britain*, vol. i, to iii (1926).